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JANUARY 1 TO JUNE 30, 1954

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ANALYTICAL (Other analytical papers related to specific commodities are included in later sections.)

OPTICAL AND CRYSTALLOGRAPHIC PROPERTIES OF SUCROSE HEMIHEPTAHYDRATE. F. T. Jones and F. E. Young, Analyt. Chem. 26(2):421, Feb. 1954. The composition and optical and crystallographic properties of sucrose hemiheptahydrate crystals grown at -7.5°C. are reported as determined by the methods of chemical microscopy.

REACTION BETWEEN CHLOROUS ACID AND GLUCOSE; QUANTITATIVE STOICHIOMETRY AND EVALUATION OF REAGENT DECOMPOSITION. H. F. Launer and Y. Tomimatsu, Analyt. Chem. 26(2):382-86, Feb., 1954. Sodium chlorite in phosphoric acid-phosphate buffers reacts with glucose in the ratio 3:1. Glucose was determined over the range 0.6 to 50 micrograms per ml. Reagent decomposition during oxidation of glucose can be closely evaluated by assumption that its rate is proportional to the geometric mean of chlorite concentration. Reagent decomposition was found to be extremely sensitive to light and to be minimum at a concentration of dihydrogen phosphate near 0.5 molar.

ISOPROPYL-ALCOHOL-PARAFFIN METHODS FOR PLANT TISSUES. R. M. Reeve, Stain Technol. 29(2):81-88, March 1954. Two methods using isopropyl alcohol for dehydration and paraffin infiltration of plant tissues are reported: (1) a modified Rawlins-Takahashi schedule in which the preliminary dehydration is effected by concentrating glycerin and (2) isopropyl alcohol as the sole agent for dehydration and paraffin infiltration.

KINETICS OF THE CHLORITE-GLUCOSE REACTION. H. F. Launer and Y. Tomimatsu, Jour. Amer. Chem. Soc. 76(9):2591-93, May, 1954. The rate law for reaction between sodium chlorite and glucose in weak acid, a system in which the reagent disappears simultaneously in an oxidation and a decomposition reaction, has been derived. Chlorite concentrations, calculated from the integrated rate law, were found to be in good agreement with titrated values at various times during experiments covering wide ranges of concentrations, 8-fold chlorite, 60-fold glucose, and 10-fold acid, and lasting 6 to 210 hours.

APPLICATION OF FORMAMIDE AS AN EXTRACTION SOLVENT WITH KARL FISCHER REAGENT FOR THE DETERMINATION OF MOISTURE IN SOME FOOD PRODUCTS. E. A. McComb and H. M. Wright, Food Technol. 8(2):73-75, February 1954. In determining moisture in dry food materials, the Karl Fischer method and use of formamide as an extraction solvent offer the advantages of speed, simple manipulations, and good precision over more commonly used procedures.

ALL-GLASS ATOMIZER FOR CHROMATOGRAPHIC ANALYSIS PROCEDURES. V. H. Ortegren, Analyt. Chem. 26(5):943-44, May 1954. The atomizer can be made in a glass-blowing shop. Advantages include control of rate of atomization, avoidance of discharge of large droplets, and use with any vessel, even an open beaker.

ENZYMES

INDUSTRIAL PRODUCTION AND UTILIZATION OF ENZYMES FROM FLOWERING PLANTS. S. Schwimmer, Econ. Bot. 8(2):99-113, April-June 1954. Papain from papaya fruit and malt from barley are discussed at length. Other plant sources of enzymes such as alfalfa, oranges, and beans are discussed briefly.

*LIPASE PREPARATIONS. Patent 2,676,906 to W. G. Rose and A. K. Balls, April 27, 1954. Lipase products of high lipolytic activity are prepared by grinding castor beans in water, aging the resulting material, then acidifying the mixture, and subjecting it to centrifugation to prepare a lipase cream.

*PREPARATION OF PARTIAL GLYCERIDES. Patent 2,680,090 to W. G. Rose and A. K. Balls, June 1, 1954. In the preparation of partial glycerides by the action of a lipase preparation on a fat or oil, the amount of water initially present is limited to about 0.5 to 2.5 percent, whereby the proportion of partial glycerides to fatty acids in the final product is increased to at least equal proportions.

FIELD CROPS--Alfalfa, Rice, Wheat

Alfalfa

ALFALFA CAROTENOIDS. XANTHOPHYLLS IN FRESH AND DEHYDRATED ALFALFA. E. M. Bickoff, A. L. Livingston, G. F. Bailey, and C. R. Thompson, Jour. Agr. and Food Chem. 2(11):563-67, May 1954. The carotenoids of fresh and dehydrated alfalfa were separated chromatographically. Five xanthophylls (lutein, violaxanthin, cryptoxanthin, zeaxanthin, and neoxanthin) comprised 99 percent of the xanthophylls in fresh material. The same five pigments comprised 87 percent of the xanthophylls of a typical dehydrated meal. A total of more than 40 xanthophyll bands were found in dehydrated meal.

EVALUATION OF TWO METHODS FOR THE DETERMINATION OF CAROTENE. E. M. Bickoff, A. L. Livingston, and G. F. Bailey, Jour. Assoc. Offic. Agr. Chem. 37(2): 509-18, May 1954. Possible sources of error that may be present in the method of the Association of Official Agricultural Chemists for carotene have been indicated and evaluated. The proposed modification of the AOAC method now in use in this Laboratory has been compared with the AOAC method.

ALFALFA SAPONIN. E. D. Walter, G. R. Van Atta, C. R. Thompson, and W. D. Maclay, Jour. Amer. Chem. Soc. 76(8):2271-73, April 1954. A saponin fraction recovered from the aerial parts of alfalfa was found to comprise more than one individual saponin. A sapogenin was obtained in crystalline form and several of its derivatives characterized it as a C_{30} monounsaturated dihydroxy dicarboxylic acid.

*PRELIMINARY INVESTIGATIONS ON THE ROLE OF ALFALFA SAPONIN IN RUMINANT BLOAT. I. L. Lindahl, A. C. Cook, R. E. Davis, and W. D. Maclay (with Animal & Poultry Husbandry Branch, Agricultural Research Service, U.S. Dept. Agr.), Science 119(3083):157-58, Jan. 29, 1954. The method of recovery of saponin and tests in which saponin was administered to ruminant animals are reported. In 10 tests with animals symptoms of bloat resulted in 8.

Rice

EFFECT OF PROCESSING CONDITIONS ON THE EXPANDED VOLUME, COLOR, AND SOLUBLE STARCH OF PARBOILED RICE. R. L. Roberts, A. L. Potter, E. B. Kester, and K. K. Keneaster, Cereal Chem. 31(2):121-29, March 1954. Several samples of parboiled rice were prepared under widely varied processing conditions. Measurements of expanded volume, color, and soluble starch were made and compared with steeping and steaming treatments. Steaming temperature exhibited the greatest influence on all of these factors, while steeping conditions and steaming time showed minor effects.

HYGROSCOPIC EQUILIBRIA OF WHOLE-GRAIN EDIBLE FORMS OF RICE. D. F. Houston and E. B. Kester, Food Technol. 8(6):302-4, June 1954. Equilibrium moisture values have been determined for parboiled and quick-cooking rices at 77°F. and parboiled rice at 100°F. at relative humidities of 11 to 93 percent. Hysteresis effects were found to be greater on quick-cooking and parboiled rices (processed with moist heat) than on raw white and brown rices.

RICE INVESTIGATIONS AT WESTERN UTILIZATION RESEARCH BRANCH. E. B. Kester and D. F. Houston, Rice Annual, pp. 20-22, 1954. A general review of the researches conducted on rice during the year 1953.

Wheat

A METHOD FOR THE QUANTITATIVE DETERMINATION OF ALBUMINS AND GLOBULINS IN WHEAT FLOUR. J. W. Pence, N. E. Weinstein, and D. K. Mecham, Cereal Chem. 31(1):29-37, Jan. 1954. The albumin and globulin contents of wheat flour can be estimated quantitatively by a method developed from the tryptophan and amide nitrogen contents of the albumin, globulin, and gliadin proteins. The method provides a better estimate of soluble proteins than has heretofore been available because interference caused by varying amounts of gliadin has been largely eliminated and the proportions of albumins and globulins are determined by means of characteristic chemical properties.

WHEAT PRODUCTS. GEL-FORMING PHOSPHORYLATED DERIVATIVE OF WHEAT GLUTEN. A. Mohammad, D. K. Mecham, and H. S. Olcott, Jour. Agr. and Food Chem. 2(3):136-37, Feb. 1954. A derivative of wheat gluten was prepared by treatment with phosphoric acid and urea at 140°C. The product was capable of absorbing about 200 times its weight of water to form a firm gel. This method has several advantages over those previously described.

PROBLEMS AND PROGRAM ON WHEAT UTILIZATION AT THE WESTERN UTILIZATION RESEARCH BRANCH. W. D. Maclay and D. K. Mecham, Amer. Assoc. Cereal Chem. Transactions 12(2):87-96, June 1954. A review of projects under way.

FRUIT AND PECTIN

STABILIZED ORANGE JUICE POWDER. I. PREPARATION AND PACKAGING. S. I. Strashun and W. F. Talburt, Food Technol. 8(1):40-45, Jan. 1954. New developments in preparation, flavor stabilization, and packaging of powder made from orange juice are described. Effects of pressure, temperature, tray loading, and additives such as corn-sirup solids, pulp or insoluble solids, orange oil and sodium bisulfite, on drying characteristics are reported.

STABILIZED ORANGE JUICE POWDER. II. CHANGES DURING STORAGE. A. M. Mylne and V. S. Seamans, Food Technol. 8(1):45-50, Jan. 1954. Results of a storage study on orange powder containing added corn sirup solids prepared by a vacuum drying procedure are reported. Effects of atmosphere, type of oil, method of oil addition, in-package desiccation, and added sulfur dioxide on storage stability are reported.

*ORANGE JUICE POWDER. W. F. Talburt, Citrus Indus. 35(3):5-6, 8, March 1954. A general review of a recently developed process for the production of orange juice powder.

FROZEN APPLE JUICE CONCENTRATE: PERMISSIBLE TEMPERATURES FOR CONCENTRATION OF WESTERN VARIETIES OF APPLES. L. H. Walker, D. C. Patterson, and V. S. Seamans, Food Technol. 8(2):108-110, Feb. 1954. Results of investigations concerning effects of various temperatures during concentration upon changes in flavor of juices from various varieties of Western apples are reported and discussed.

PREPARATION OF FRESH ITALIAN PRUNE JUICE CONCENTRATES. L. H. Walker and D. C. Patterson, Food Technol. 8(4):208-10, April 1954. Information is presented concerning conversion of Italian prunes into attractive and tasty juice and juice concentrate products. Description of process, equipment, and results of investigations of effects of maturation before harvest, removal and return of essence, temperatures during concentration and temperatures during storage upon product are included.

*FACTORS AFFECTING THE DEGREE OF BROWNING IN FROZEN PEACHES STORED AT 20-28°F. D. G. Guadagni, M. M. Stithem, and C.C. Nimmo, Quick Frozen Foods 16(11): 46-8, June 1954. Increasing sirup volume, delayed freezing, slow freezing and vacuum siruping all had a marked effect on browning in frozen peaches stored at 20-28°F. As the sirup density was increased, the degree of thawing and browning was also increased.

DETERIORATION IN STORAGE. A. L. Curl and W. F. Talburt (chapter in Chemistry and Technology of Fruit and Vegetable Juice Production, edited by D. K. Tressler and M. A. Joslyn), pp. 219-61, 1954. Problems encountered in storage of processed (both single strength and concentrated) fruit and vegetable juices are reviewed and discussed.

VARIATION OF THE MICHAELIS CONSTANT WITH THE CONCENTRATIONS OF THE REACTANTS IN AN ENZYME-CATALYZED SYSTEM. L. L. Ingraham and B. Makower, Jour. Phys. Chem. 58(3):266-70, March 1954. An analysis has been made of the kinetics of an enzymatic system of two reactants to determine the dependence of the Michaelis constant on the concentrations of the reactants. Two previously suggested types of mechanisms were examined.

REVERSIBLE INACTIVATION OF POLYPHENOL OXIDASE. J. D. Ponting, Jour. Amer. Chem. Soc. 76(3):662-63, Feb. 1954. Measurements of activity of polyphenol oxidase preparations on catechol have revealed a type of inactivation or inhibition of enzyme that is reversible by ascorbic acid and differs from the "reaction inactivation" that occurs in the presence of excess ascorbic acid.

CONVERSION OF GLUCOSE-1-C^{14} (abstract). B. Axelrod, C. G. Seegmiller, and R. M. McCready, Fed. Proc. 13(1)pt. 1:177, March, 1954. In an attempt to learn something of the pathways by which pectin is formed in the plant, glucose labeled in the "one" position was fed to a green blackberry which was synthesizing pectin. The pectin obtained from the berry was then hydrolyzed enzymically. Its constituent carbohydrates were isolated and degraded chemically.

FRUIT HISTOGENESIS IN RUBUS STRIGOSUS. I. OUTER EPIDERMIS, 'ARENCHYMA, AND R'CEPTACLE. R. M. Reeve, Amer. Jour. Bot. 41(2):152-60, Feb. 1954. A study of the developmental anatomy of the fruit of red raspberry--with 17 illustrations.

FRUIT HISTOGENESIS IN RUBUS STRIGOSUS. II. ENDOCARP TISSUES. R. M. Reeve, Amer. Jour. Bot. 41(3):173-81, March 1954. A study of the developmental anatomy of the fruit of red raspberry--with 25 illustrations.

ORANGE CAROTENOIDS. POLYOXYGEN CAROTENOIDS OF VALENCIA ORANGE JUICE. A. L. Curl and G. F. Bailey, Jour. Agr. and Food Chem. 2(13):685-90, June 1954. A report of studies on countercurrent distribution of saponified juice in a Craig apparatus. Eight constituents in three fractions were previously described. The present report is concerned with three additional fractions.

ACTION OF PECTIC ENZYMES ON OLIGOGALACTURONIC ACIDS AND SOME OF THEIR DERIVATIVES. R. M. McCready and C. G. Seegmiller, Arch. Biochem. and Biophys. 59(2):440-50, June 1954. Further information has been obtained on structural requirements of substrates attacked by polygalacturonase (PG). Purified fungal PG attacked all substrates having a glycosidic galacturonide bond between two adjacent free carboxyl groups, but failed to hydrolyze a glycosidic galacturonide linkage where one or both adjacent carboxyl groups were esterified. It behaved as if it is a single enzyme.

CRYSTALLINE BRUCINE SALTS OF OLIGOGALACTURONIDES. R. M. McCready, E. A. McComb, and D. R. Black, Jour. Amer. Chem. Soc. 76(11):3035-36, June 1954. The actions of enzymes on pectic substances have produced a series of oligogalacturonides during hydrolyses. Galacturonic and di- and tri-galacturonic acids, produced by enzymic hydrolysis of polygalacturonic acid with polygalacturonase, were separated by chromatography on heavy filter paper, crystallized as their brucine salts, and characterized by X-ray and chemical analyses.

PECTIN--A PRODUCT OF CITRUS WASTE. R. M. McCready and H. S. Owens, Econ. Bot. 8(1):29-47, Jan.-March 1954. A review of citrus production, chemical and physical properties of pectin, pectic enzymes, manufacture and uses of pectin, and pectin nomenclature.

*CONDITIONING OF LIMED PEAR WASTE. Patent 2,670,289 to R. P. Graham, G. H. Neel, and N. Fishman, Feb. 23, 1954. Concerns the treatment of pear waste with lime, followed by pressing to separate the juice from the solids. The juice and solids fractions are separately dehydrated to produce a molasses and a pomace, respectively, both useful as feeds. A feature of the process is that during the lime treatment the mass is subjected to repeated cutting action by rotating blades to condition the mass so that it can more easily be separated into its solid and liquid components.

*LOW-METHOXYL PECTIN GELS AND METHOD OF MAKING THE SAME. Patent 2,673,157 to A. D. Shepherd, R. M. McCready, and H. S. Owens, March 23, 1954. Describes a pectin-containing mix from which puddings can be prepared ready for the table in a few minutes. A feature of the product is that no heating is necessary in preparation of the pudding; the mix is simply stirred into cold water, then allowed to stand for a few minutes to gel. The pudding powder contains dried milk, flavorings, and a preparation obtained by spray- or drum-drying a solution of sugar and low-methoxyl pectin.

PHARMACOLOGY

COMPARATIVE STUDIES ON THE TOXICITY OF WASHED CELLS OF BACILLUS MEGATERIUM AND BREWERS' YEAST. A. M. Ambrose and F. DeEds, Jour. Amer. Pharm. Assoc. 43(3):185-87, March 1954. Data are given on the continued oral ingestion of dried cells of Bacillus megaterium and brewers' yeast by rats for 400 days. No toxic effects were observed in rats ingesting diets containing up to 20 percent of B. megaterium or brewers' yeast as judged by growth response, hemaglobin values, organ weights, and histopathological examination of the visceral organs.

OILSEED PROCESSING. DETOXIFICATION AND TOXICOLOGICAL STUDIES OF TUNG MEAL. G. E. Mann, W. H. Hoffmann, Jr., and A. M. Ambrose, Jour. Agr. and Food Chem. 2(5):258-63, March 1954. (With Southern Regional Research Branch.) The occurrence of a heat-stable toxic principle in tung meal seems to require consideration in any proposed commercial detoxification process.

ABSORPTION AND METABOLISM OF RUTIN AND QUERCETIN IN THE RABBIT. C. W. Murray, A. N. Booth, F. DeEds, and F. T. Jones, Jour. Amer. Pharm. Assoc. 43(6)pt. 1, Sci. Ed., pp. 361-64, June 1954. When fed to rabbits substantial amounts of these compounds are absorbed, metabolized and largely excreted in urine. Evidence of at least 4 compounds in urine has been obtained. One has been identified and isolated as 3,4-dihydroxyphenylacetic acid.

CHRONIC TOXICITY STUDIES ON CONIDENDRINS AND CONIDENDROLS. R. H. Wilson and A. J. Cox, Jr., Proc. Soc. Expt. Biol. and Med. 86(2):247-50, June 1954. Chronic toxicity studies of alpha-conidendrin, beta-conidendrin, alpha-conidendrol, and beta-conidendrol were conducted on rats by feeding diets containing up to 1 percent of these materials for 420 days. Growth was normal. Vacuolization of liver cells, some slight kidney damage, and occasional focal abnormalities in the pancreas were seen in males receiving the conidendrols at the 1 percent level. The materials were not irritating and did not sensitize the skin. These compounds appear safe for use as fat antioxidants.

POULTRY PRODUCTS

FLAVOR STUDIES. ORIGIN OF CHICKEN FLAVOR. E. L. Pippen, A. A. Campbell, and I. V. Streeter, Jour. Agr. and Food Chem. 2(7):364-67, March 1954. The studies revealed that meat contains more flavor than bones, skin, or fat. No difference was found between light and dark meat in amount of flavor. Results show that a substantial amount of flavor precursors can be extracted by water from uncooked comminuted muscle.

EFFECT OF SCALDING TEMPERATURE ON THE PROCESSING AND INITIAL APPEARANCE OF TURKEYS. M. F. Pool, E. P. Mecchi, H. Lineweaver, and A. A. Klose, Poultry Sci. 33(2):274-79, March 1954. Turkeys were scalded at 120° to 140°F. for 60 seconds and at 125°F. for 30, 60, and 120 seconds. Feather pulling force was established as a reliable objective method of measuring efficiency of feather removal by various scalding procedures. Appearance of the freshly slaughtered, high-temperature-scalded turkey was shown to be acceptable if moisture losses were controlled.

EFFECT OF SCALDING TEMPERATURE ON QUALITY OF STORED FROZEN TURKEYS. A. A. Klose and M. F. Pool, Poultry Sci. 33(2):280-89, March 1954. Turkeys that had been subjected to various experimental conditions of scalding, chilling, and packaging were stored at -5°F. for periods up to 12 months and then evaluated. The high-temperature-scalded turkey was shown to be an acceptable product for frozen storage if moisture losses were controlled from slaughter through consumption.

HIGH-TEMPERATURE TREATMENT OF SHELL EGGS. R. E. Feeney, L. R. MacDonnell, and F. W. Lorenz, Food Technol. 8(5):242-45, May 1954 (with Univ. Calif., Davis). Results indicate that short-time, high-temperature treatment of shell eggs prevents microbial spoilage if applied within 24 hours after exposure of eggs to contamination. Most of the experiments were performed by immersion of artificially infected eggs in boiling water for 2 to 3 seconds.

EFFECTS OF CROTOXIN (LECITHINASE A) ON EGG YOLK AND YOLK CONSTITUTION. R. E. Feeney, L. R. MacDonnell, and H. Fraenkel-Conrat, Arch. Biochem. and Biophys. 48(1):130-40, Jan. 1954. Lecithinase A (crotoxin) reduced the gelation of frozen egg yolk. The reaction of crotoxin with lipoproteins of yolk (lipovitellin and lipovitellenin) resulted in the formation of hemolytic yolk fractions, whose hemolytic behavior was studied with erythrocytes.

PROTEINS OF CHICKEN, DUCK, AND TURKEY EGG WHITE. L. R. MacDonnell, E. D. Ducay, T. F. Sugihara, and R. E. Feeney, Biochimica et Biophysica Acta 13(1): 140-41, Jan. 1954. Data on comparative contents of lysozyme, conalbumin, ovomucoid, and cysteine are reported.

*RECENT DEVELOPMENTS IN PRECOOKED FROZEN FOODS. H. L. Hanson, Jour. Amer. Dietetic Assoc. 30(3):241-44, March 1954. A general review.

RESEARCH MAKES FROZEN COOKED POULTRY PRODUCTS A REALITY. H. L. Hanson, Poultry Processing and Marketing 60(6):12, 20, June 1954; 60(8):17, 28-30, Aug. 1954. A general review of recent progress and of achievements and problems.

*METHOD OF PRESERVING SHELL EGGS. Patent 2,673,160 to R. E. Feeney, A. H. Brown, and L. R. MacDonnell, March 23, 1954. Shell eggs are subjected to a high temperature for a period of about 3 seconds to destroy microorganisms on the shell and thus permit the eggs to be stored for longer periods. This brief period minimizes damage to the edible egg material.

RUBBER

(The publication and patent listed below originated from the Natural Rubber Extraction and Processing Investigations Laboratory at the U.S. Natural Rubber Research Station, Salinas, Calif., which was discontinued April 30, 1953.)

EFFECT OF MOISTURE ON RATE OF CURE OF NATURAL RUBBER. R. H. Taylor, F. E. Clark, and W. P. Ball, India Rubber World 129(6):751-55, March 1954. Curing characteristics of compounded rubber and stress-strain properties, particularly for under-cures, are highly sensitive to moisture. Scorch time decreased and cure increased with increase in moisture.

*METHOD OF TREATING RUBBER OBTAINED FROM RUBBER-BEARING PLANTS. Patent 2,665,317 to F. E. Clark and I. C. Feustel, Jan. 5, 1954. Particles of guayule rubber are coated with a water-insoluble soap, such as calcium or zinc stearate whereby agglomeration of the particles during extraction or other processing is prevented. The soap coating does not interfere with de-resination of the particles nor with drying.

VEGETABLES

AIC-373, IN-PACKAGE DESICCATION OF DEHYDRATED FOODS (mimeographed). C. F. Hendel and H. K. Burr, June, 1954. Summarizes both earlier and more recent studies of (1) protection obtainable for various products by in-package desiccation, (2) choice of desiccant, (3) choice of desiccant container, and (4) rate of desiccation. An appendix gives empirical tests which have been used for the appraisal of suitability of calcium oxide samples and for testing potential desiccant containers.

RETENTION OF QUALITY IN DEHYDRATED VEGETABLES THROUGH IN-PACKAGE DESICCATION. R. R. Legault, C. E. Hendel, and W. F. Talburt, Food Technol. 8(3):143-49, March 1954. A study of effect of in-package desiccation on storage stability of dehydrated white potato, sweetpotato, cabbage, carrot, beet, and onion. It was demonstrated that substantial protection against nonenzymatic browning can be obtained by in-package desiccation. Losses of ascorbic acid and of sulfite were also markedly reduced.

DESICCATING IN THE PACKAGE. W. F. Talburt, C. E. Hendel, and R. R. Legault, Food Engin. 26(4):79-81, 194, 197, April 1954. A general discussion of various factors to be considered in in-package desiccation of various products, including choice of desiccant and desiccant container, and volume occupied by desiccants.

OBSERVATIONS ON RATE OF IN-PACKAGE DESICCATION. C. E. Hendel and R. R. Legault, Food Technol. 8(4):189-91, April 1954. Observations on rate and extent of in-package desiccation of five dehydrated vegetables at temperatures of 75°, 100°, and 120°F. are reported. Increases in rates of desiccation of approximately 2- to 3-fold per 18°F. of temperature increase were found.

ESTIMATION OF MATURITY OF FROZEN PEAS. TENDEROMETER MEASUREMENTS ON COOKED PRODUCT. R. U. Makower and H. K. Burr, Food Technol. 8(4):201-4, April 1954. Use of the tenderometer for measuring texture of cooked frozen peas was investigated. Effects of several procedural variables were studied and a recommended method developed. The test correlated well with organoleptic evaluations of texture and has the advantages of speed and objectivity.

EFFECTS OF PROCESSING ON ESTIMATES OF RAW STOCK MATURITY AND OF TEXTURAL QUALITY IN FROZEN LIMA BEANS. C. Sterling and M. M. Boggs, Food Technol. 8(5):235-39, May 1954. (With University of California, Davis.) Samples of Fordhook lima beans were subjected to experiments designed to measure correlations between taste panel scores and objective tests. Of the latter, only tenderometer values on the cooked product showed a highly significant correlation with panel scores.

DRYING PROBLEMS IN THE ADD-BACK PROCESS FOR PRODUCTION OF POTATO GRANULES. G. H. Neel, G. S. Smith, M. W. Cole, R. L. Olson, W. O. Harrington, and W. R. Mullins, Food Technol. 8(5):230-34, May 1954. Results of preliminary studies are reported on two experimental driers. One is an air-lift drier for use in primary drying. The other, a fluidized-bed drier, is suitable for reduction of moisture to very low levels.

DEHYDRATED FOODS. CHANGES IN PHYSICAL PROPERTIES OF STARCH IN POTATO GRANULES DURING PROCESSING. A. L. Potter, Jour. Agr. and Food Chem. 2(10): 516-19, May 1954. Studies during storage of granules at different temperatures and moisture contents showed that rate of changes in solubility and swelling power of starch and of starch gels increased as moisture content decreased to 30 percent and as the temperature fell from 50° to 5°C. These changes paralleled the increase in granulation.

INHIBITION OF ENZYMIC COLOR FORMATION IN POTATO BY ADENOSINE TRIPHOSPHATE. R. U. Makower and S. Schwimmer, Biochimica et Biophysica Acta 14(1):156-57, May 1954. The inhibition of enzymatic color formation in potato extracts, macerates, and slices by adenosine triphosphate was observed. This inhibition requires the presence of active mitochondria and appears to be related to oxidative phosphorylation of the potato.

SUCROSE METABOLISM IN POTATO MACERATES (abstract). S. Schwimmer and R. U. Makower, Fed. Proc. 13(1)pt. 1:294, March, 1954. Syntheses of sucrose and amylopectin were demonstrated in potato macerates under specific conditions. The macerates showed little sucrose-hydrolyzing activity, partly because of the presence of a naturally recurring inhibitor.

VEGETABLE COMPONENTS. SOME CARBOHYDRATE COMPONENTS OF TOMATO. K. T. Williams and A. Bevenue, Jour. Agr. and Food Chem. 2(9):472-74, April 1954. The carbohydrate componentsof tomato were separated into free sugars and polysaccharides. The free sugars, representing more than 60 percent of the solids, were D-fructose, D-glucose, sucrose, and a ketoheptose. The polysaccharides, an araban-galactan mixture, a xylan-rich fraction, pectin, and alpha-cellulose, were present in comparable amounts.

A MODIFICATION OF THE IODINE TITRATION METHOD FOR DETERMINATION OF SULFUR DIOXIDE IN DEHYDRATED CABBAGE. E. F. Potter, Food Technol. 8(5):269-70, May 1954. Since the formaldehyde-bisulfite method developed by Potter and Hendel for dehydrated potatoes is not suitable for dehydrated cabbage, the iodine-titration method of Prater, Johnson, Pool, and Mackinney has been modified to avoid fleeting end point. Hydrogen peroxide is used to oxidize sulfite to sulfate prior to titration with iodine.

COLOR-MOISTURE RELATIONS OF YELLOW SWEET CORN. H. C. Lukens, R. P. MacKenzie, and C. H. Kunsman, Jour. Assoc. Offic. Agr. Chem. 37(2):489-99, May 1954. Studies on methods of obtaining the color reflectance data of yellow sweet corn, as a function of its moisture content, are reported. Moisture content is one of the criteria for maturity used in the processing of sweet corn.

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WOOL

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*REACTION OF WOOL WITH BETA PROPIOLACTONE AND WATER. Patent 2,672,397 to H. P. Lundgren, W. G. Rose, and H. W. Jones, March 16, 1954. By reacting wool with beta-propiolactone a modified wool is produced which exhibits greater felting power than does the untreated wool. A feature of the invention is that by addition of water to the reaction the uptake of the lactone by wool is drastically accelerated.

FRUIT AND VEGETABLE PRODUCTS LABORATORY, Prosser, Washington

SUGAR RECOVERY. RECOVERY OF SUGARS FROM PEAR-CANNING WASTE. A.M. Neubert, D. G. Graham, J. L. Henry, J. E. Brekke, and C. L. Beardsley, Jour. Agr. and Food Chem. 2(1):30-36, Jan. 1954. A process for recovery of sugars and other soluble solids from peelings, cores, and trimmings wasted in canning pears is described. The purified juice, when used as a sirup base for canning pears, replaced about one-third of the refined sugar now used in canning this fruit. The pomace, which amounts to about 25 percent of the waste, can be dried in a continuous rotary drier for use as a feed.

*STUDIES ON REMOVAL OF THRIPS FROM CANE BERRIES INTENDED FOR PROCESSING. J. E. Brekke, C. C. Nimmo, H. A. Swenson, C. E. Samuels, and J. R. Brock (with Oregon State College). Proc. 5th Ann. Pacific Northwest Industrial Waste Conference, Washington State College, 1953 (processed), pp. 62-66, discussion on pages 67-8. A summary of studies on use of wetting agents in cleaning solutions for the removal of thrips. (Information essentially same as in AIC-353, Feb. 1953.)

FRUIT AND VEGETABLE CHEMISTRY LABORATORY, 263 South Chester Ave., Pasadena 5, Calif.

FRUIT CONCENTRATES. FLAVOR FORTIFIED HIGH DENSITY FROZEN CITRUS CONCENTRATES. R. G. Rice, G. J. Keller, R. J. McColloch, and E. A. Beavens, Jour. Agr. and Food Chem. 2(4):196-98, Feb. 1954. Full-flavored high-density frozen orange juice and grapefruit juice concentrates were prepared successfully by adding appropriate amounts of cold-pressed peel oil to juice concentrates of the desired level of concentration.

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